

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant (s): Tank, *et al.*

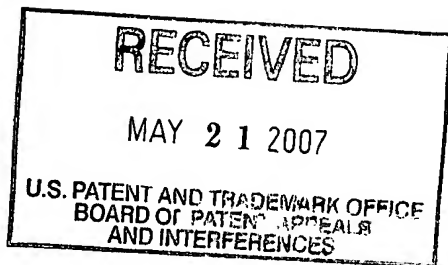
Serial No.: 10/774,238

Group Art Unit: 1617

Filed: February 6, 2004

Examiner: Claytor, Deirdre Renee

For: HIGH-STRENGTH, LOW VISCOSITY HERBICIDAL FORMULATIONS OF
GLYPHOSATE



I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING TRANSMITTED AND ADDRESSED TO COMMISSIONER FOR PATENTS, ALEXANDRIA, VA 22313 ON:
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MELANIE S. BRADLEY
PRINT OR TYPE NAME OF PERSON SIGNING CERTIFICATE
<i>Melanie S. Bradley</i>
SIGNATURE OF PERSON SIGNING CERTIFICATE
<i>May 16, 2007</i>
DATE OF SIGNATURE

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313

Sir:

Appellants' Brief Under 37 C.F.R. § 41.37

This is an Appeal from the decision of the Primary Examiner, dated March 26, 2007, finally rejecting Claims 1-3, 6 and 7 and objecting to Claim 5 of the application.

The Oral Hearing is waived. The fee set forth in § 41.20 (b) (2) accompanies Appellants' Brief.

(1) Real Party in Interest

The real party in interest is the assignee Dow AgroSciences LLC.

(2) Related Appeals and Interferences

There are no appeals or interferences known to Appellants, the Appellants' legal representation or assignee which will directly affect or be directly affected by or have a bearing on the present Appeal.

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(3) Status of the Claims

Claims 1-3, 6 and 7 stand rejected and are being appealed. Claim 5 has been found allowable but is objected to as being dependent upon a rejected claim. The claims are contained in Appendix I attached hereto.

(4) Status of Amendments

No amendments have been filed subsequent to the Final Rejection.

(5) Summary of Claimed Subject Matter

The present invention concerns herbicidal concentrate compositions consisting essentially of (a) water, (b) glyphosate, predominantly in the form of the monomethylamine or the dimethylamine salt, in solution in the water in an amount of greater than about 350 grams of acid equivalent per liter of the composition, and (c) at least one surfactant in a total amount of about 20 to about 200 grams per liter of the compositions. The surfactant is chosen from list a) through h):

- a) an alkyletheramine,
- b) a quaternary ammonium salt,
- c) an amphoteric containing both a quaternary ammonium salt and a carboxylate,
- d) an alcohol ethoxylate,
- e) an alcohol ethoxylate phosphate ester,
- f) an alkylpolyglycoside,
- g) an anionic ester of alkylpolyglycoside, or
- h) mixtures of surfactants a) – g).

(See page 2 line 22 through page 7 line 15 of the specification.)

(6) Grounds of Rejection to be Reviewed on Appeal

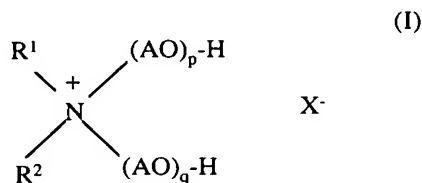
Claims 1-3 and 6-7 have been finally rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,030,923 (Okano *et al.*) in view of U.S. Patent 4,159,901 (Beestman *et al.*). It is this rejection which is being appealed.

(7) Argument

This is the fifth rejection and the first final rejection issued in connection with this application. In the first Office Action, the application was rejected under 35 U.S.C. § 103(a) as being unpatentable over the combined teachings of the U.S. Patent 4,159,901 (Beestman *et al.*) and U.S. Patent Application 203/0087764 (Pallas *et al.*). After overcoming the initial rejection, the application was objected to on the basis of informalities. After the formalities were addressed, the application was rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 6,030,923 (Okano *et al.*). After this rejection was overcome, the application was newly rejected under 35 U.S.C. § 103(a) as being unpatentable over Okano *et al.* in view of Beestman *et al.*, two references already of record, both from which the present application had previously been distinguished. This is the rejection, having now been made final, that is the subject matter of this appeal.

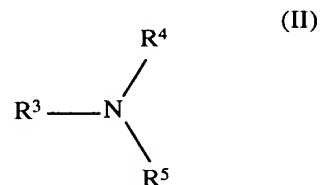
Contents of Okano *et al.*

Okano *et al.* discloses liquid agricultural chemical formulations comprising three elements: (1) a water soluble agricultural chemical, (2) a cationic surfactant of the formula I



wherein R¹ represents a straight-chain or branched, alkyl or alkenyl group having 6 to 30 carbon atoms, R² represents a hydrogen atom, a methyl group or an ethyl group, AO may be the same or different from one another and each

represents an oxyethylene group or an oxypropylene group, p and q each means an average value and is a number of 1 to 15 with the proviso that the total of p and q is from 2 to 25 and X^- represents a counter ion; and (3) an acid salt of a compound represented by formula II



wherein R^3 represents a straight-chain or branched, alkyl or alkenyl group having 4 to 18 carbon atoms, and R^4 and R^5 may be the same or different from each other and each represents a hydrogen atom, a methyl group or an ethyl group.

Difference Between Okano *et al.* and claims in issue

At column 3, Okano *et al.* lists a variety of water-soluble agricultural chemicals to which his invention applies, including fungicides (six specific examples), plant growth regulators (four specific examples) and herbicides (six separate classes and thirteen specific examples). In the Tables, Okano *et al.* includes examples of the monomethylamine and dimethylamine salts of glyphosate along with the *isopropylamine* and diammonium salts of glyphosate. Thus, with respect to the water-soluble agricultural chemical, the present invention is limited to a selection of only two glyphosate salts, the monomethylamine and dimethylamine salts, among the myriad of water-soluble agricultural chemicals suggested by Okano *et al.*

The cationic surfactants of formula I of Okano *et al.* generally correspond to the quaternary ammonium surfactants b) of the present invention. Only a slight overlap exists between the cationic surfactants of Formula I of Okano *et al.* and the quaternary ammonium surfactants b) (iv) of the present invention.

The third essential element of Okano *et al.* is an acid salt of an alkylamine of Formula II. According to Okano *et al.*, this acid salt of the

alkylamine is necessary to impart stability to the composition. Without such an acid salt of an amine, Okano *et al.* shows that comparative examples 3 and 4 of Table 1 and comparative example 8 of Table 3 separate into two phases and could not be evaluated. The present invention provides a stable composition of glyphosate monomethylamine and dimethylamine without the essential third element.

The Examiner contends that in the absence of what the basic and novel characteristics actually are, “consisting essentially of” language will be construed as equivalent to “comprising.” The claimed compositions contain greater than 350 grams of acid equivalent of glyphosate per liter (claim 1). The compositions have low viscosity, less than 140 centipoise (page 11 lines 6-8). The compositions are clear, homogeneous and do not exhibit cloudiness (page 9 lines 8-10). The compositions do not exhibit separation or precipitation/crystallization (page 9 lines 13-14). The compositions exhibit all of these characteristics while “consisting essentially of” water, at least 350 g acid equivalents of glyphosate monomethylamine or dimethylamine salt and from 20 to 200 grams per liter of a surfactant, i.e., without the stabilizing acid salt of an amine required by Okano *et al.*

The Examiner has summarily dismissed these arguments as nonpersuasive. In support of the dismissal, the Examiner cites Okano *et al.* column 5 lines 61-63:

“By using such the acid salts of such an amine, the amount of the agricultural chemical can be enhanced.”

Rather than supporting the Examiner’s contention, this clearly teaches away from the present invention where stable high strength compositions are obtained without such salts. The acid salt of an amine is not needed to enhance the amount of agricultural chemical. Furthermore, the Appellant is confused by the Examiner’s assertion that because Okano *et al.* teaches that his composition is “comprised” of three essential elements, one of which is essential to supporting stability, that elements can be added or deleted without affecting the properties of the composition. Okano *et al.* teaches in the

comparative examples that removal of the acid salt of an amine results in an unstable composition. The Appellant has found that with certain salts of glyphosate (monomethylamine and dimethylamine) and certain surfactants (a-h), stable compositions can be obtained.

Contents of Beestman *et al.*

Beestman *et al.* discloses aqueous agricultural compositions containing a glyphosate derivative and a thiol compound for inhibiting corrosion of metal surfaces. The compositions can employ anionic, cationic or non-ionic surfactants.

Difference between Beestman *et al.* and the claims in issue

At column 10, Beestman *et al.* lists over 40 specific acids and esters of glyphosate. As acknowledged by the Examiner, while Beestman *et al.* discloses the di(monomethylamine) salt and the di(dimethylamine) salt of glyphosate, it does not specifically disclose the monomethylamine salt and dimethylamine salt selected in the claims of the Appellant.

At column 3 lines 19-63, Beestman *et al.* describes the anionic, cationic and non-ionic surfactants useful in its compositions. Some overlap exists between the disclosed non-ionic surfactants of Beestman *et al.* and those of a) of the present invention and between the quaternary amines of Beestman *et al.* and those of b) of the present invention.

The third essential element of Beestman *et al.* is the thiol corrosion inhibitor. The present invention does not contain any thiol corrosion inhibitor.

The Examiner has applied the same remarks concerning the interpretation of the “consisting essentially of” and the meaning of “comprised” as it relates to interpretation of the prior art. Both have been addressed previously with respect to Okano *et al.*

With respect to concentrations of the required components, Beestman *et al.* discloses that his composition contain from 5 to 95 parts by weight of an agriculturally active agent, from 0.25 to 25 parts by weight of a non-ionic or

anionic surfactant, from 0 to 25 parts by weight of a dispersant, from 4.5 to 95 parts by weight of an inert liquid extender, e.g., water, and from 0.1 to 2 parts by weight thiol compound (column 4 lines 36-44). The Appellants dispute the Examiner's characterization of this broad description as an optimized ratio of components, particularly with respect to the agriculturally active agent and the inert liquid extender which can range from 5 to 95 parts and from 4.5 to 95 parts respectively.

The Combination of Okano *et al.* and Beestman *et al.*

The combination of Okano *et al.* and Beestman *et al.* provides a glyphosate composition containing (1) a water soluble agricultural chemical, including monomethylamine or the dimethylamine salts of glyphosate, (2) a quaternary surfactant, a (3) an acid salt, e.g., a hydrochloride salt, of an alkylamine, and (4) a thio compound as a corrosion inhibitor.

The present invention lacks the required acid salt of an alkylamine (3) of Okano *et al.* and the required thio compound corrosion inhibitor (4) of Beestman *et al.* Thus the combination of Okano *et al.* and Beestman *et al.* does not provide a *prima facie* case of obviousness. The Examiner cannot pick and choose only selected portions of the cited references and indiscriminately delete essential elements.

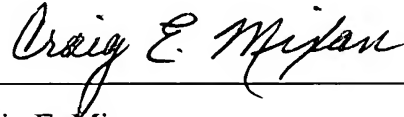
The Examiner further states that a herbicide composition having a viscosity of less than 140 centipoise is obviously taught in the herbicidal composition of Okano *et al.* since this composition and the claimed composition are comprised of the same components and they obviously share the same physical properties. As previously pointed out, the compositions of Okano *et al.* and the present invention do not necessarily contain the same components and viscosity of the resulting composition is dependent on the nature and the concentrations of the components. Only when the compositions are identical would one expect them to have the same viscosity.

Even if a *prima facie* case of obviousness was presented, the selection of the monomethylamine and the dimethylamine salts of glyphosate in the

present compositions has exhibited unexpected benefits compared to the prior art. Tables 9 and 10 illustrate the superior and unexpected efficacy respectively of the high strength MMA salt formulation on weeds in general and lambsquarter in particular. Table 6 illustrates the unexpected absence of antagonism of glyphosate DMA compared to glyphosate potassium salt when mixed with triclopyr TEA. The Examiner has neither acknowledged nor addressed these unexpected benefits of the present invention.

It is earnestly submitted that the controlling facts in the present record fail to support a conclusion of obviousness under 35 U.S.C. § 103 (a). The Appellants believe that the Examiner has erred in the interpretations of law and in the interpretations of the teachings of the prior art. Consideration of the foregoing remarks and reversal of the Final Rejection of Claims 1-3 and 6-7 are respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, reading "Craig E. Mixan", is positioned above a horizontal line.

Craig E. Mixan
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Phone: (317) 337-4812

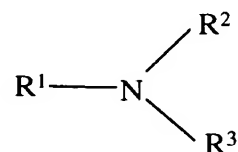
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Appendix I

Listing of Claims

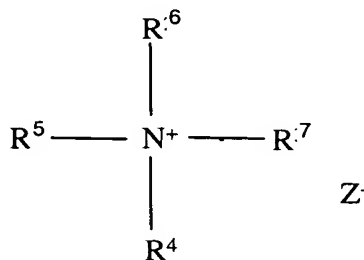
What is claimed is:

1. (Previously presented) A high-strength herbicidal concentrate composition, having a viscosity of less than 140 centipoise, consisting essentially of: (a) water, (b) glyphosate, predominantly in the form of the monomethylamine or the dimethylamine salt, in solution in the water in an amount of greater than about 350 grams of acid equivalent per liter of the composition, and (c) at least one surfactant in a total amount of about 20 to about 200 grams per liter of the composition in which the surfactant is
- a) an alkyletheramine surfactant having the chemical formula



in which R^1 is a $\text{C}_8 - \text{C}_{24}$ straight or branched chain, saturated or unsaturated hydrocarbyl group, optionally interrupted by one or more ether linkages, and R^2 and R^3 are independently polyoxyalkylene chains having in total 2 to about 22 alkylene oxide units;

- b) a quaternary ammonium surfactant having the chemical formula



in which Z^- is an agriculturally acceptable anion and R^4 , R^5 , R^6 and R^7 include, without limitation, the following:

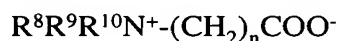
- (i) R^4 is a benzyl or a $\text{C}_8 - \text{C}_{24}$ straight or branched chain, saturated or unsaturated hydrocarbyl group, optionally interrupted by one or more ether linkages, and R^5 , R^6 and R^7 are independently $\text{C}_1 - \text{C}_4$ alkyl groups;

(ii) R^4 and R^5 are independently a $C_8 - C_{24}$ straight or branched chain, saturated or unsaturated hydrocarbyl group, optionally interrupted by one or more ether linkages, and R^6 and R^7 are independently $C_1 - C_4$ alkyl groups;

(iii) R^4 is a $C_8 - C_{24}$ straight or branched chain, saturated or unsaturated hydrocarbyl group, optionally interrupted by one or more ether linkages, R^5 is a polyoxyalkylene chain having about 2 to about 22 $C_2 - C_4$ alkylene oxide units, and R^6 and R^7 are independently $C_1 - C_4$ alkyl groups; or

(iv) R^4 is a $C_8 - C_{24}$ straight or branched chain, saturated or unsaturated hydrocarbyl group, optionally interrupted by one or more ether linkages, R^5 and R^6 are polyoxyalkylene chains having about 2 to about 22 $C_2 - C_4$ alkylene oxide units, and R^7 is a $C_1 - C_4$ alkyl group;

c) an amphoteric surfactant having the chemical formula



in which R^8 , R^9 , R^{10} and n include, without limitation, the following:

(v) R^8 is a $C_8 - C_{24}$ straight or branched chain, saturated or unsaturated hydrocarbyl group, and R^9 and R^{10} are independently $C_1 - C_4$ alkyl groups or a hydrogen atom; and n is an integer between 1 to 5; or

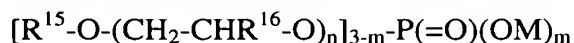
(vi) R^8 is a $[R^{11}-CONH-(CH_2)_x-]$ radical where R^{11} is a $C_8 - C_{24}$ straight or branched chain, saturated or unsaturated hydrocarbyl group, x is an integer between 1 to 5, and R^9 and R^{10} are independently $C_1 - C_4$ alkyl groups or a hydrogen atom; and n is an integer between 1 to 5;

d) an alcohol ethoxylate having the chemical formula



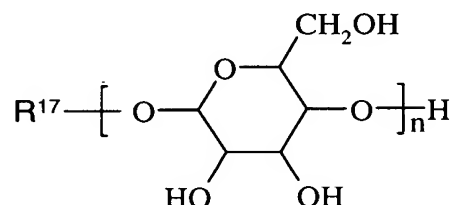
in which formula R^{12} is a $C_8 - C_{24}$ straight or branched chain, saturated or unsaturated hydrocarbyl group, R^{13} represents independently a hydrogen atom or a methyl or ethyl radical, n is an integer between 2 and 50 and R^{14} is a $C_1 - C_4$ alkyl group or a hydrogen atom;

e) an alcohol ethoxylate phosphate ester having the chemical formula



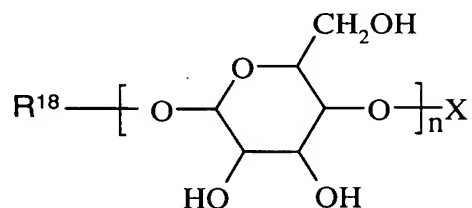
in which formula R^{15} is a $C_6 - C_{20}$ straight or branched chain, saturated or unsaturated hydrocarbyl group, R^{16} represents independently a hydrogen atom or a methyl or ethyl radical, n is an integer between 0 and 10, M represents independently a hydrogen atom, an alkali or alkaline-earth metal, an ammonium or an alkylammonium ion, and m is a whole number in the range 1 to 2;

f) an alkylpolyglycoside having the general chemical formula



in which the polyglycoside is derived from glucose or other mono-, di- or polysaccharides, n is the degree of polymerisation and is typically within the range from 1 to 3, and R^{17} is a $C_6 - C_{18}$ straight or branched chain, saturated or unsaturated hydrocarbyl group;

g) an anionic ester derivative of alkylpolyglycosides having the chemical formula

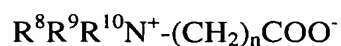


in which the polyglycoside is derived from glucose or other mono-, di- or polysaccharides, n is the degree of polymerisation and is typically within the range from 1 to 3, R^{18} is a $C_6 - C_{18}$ straight or branched chain, saturated or unsaturated hydrocarbyl group, and X represents a carboxylate moiety derived from a bi- or tri-carboxylic acid; or

h) mixtures thereof.

2. (Original) A composition of Claim 1 which contains greater than about 440 grams of acid equivalent of glyphosate per liter of the composition.
3. (Previously presented) A composition of Claim 1 having a viscosity of less than 100 centipoise.
4. (Canceled)

5. (Previously presented) A composition of Claim 1 in which the surfactant is a mixture of a blend of tallowamine ethoxylates and a blend of amphoteric surfactants having the formula



in which R^8 is a $C_{12} - C_{14}$ hydrocarbyl group, R^9 and R^{10} are both CH_3 and n is 1.

6. (Original) A composition of Claim 5 in which the viscosity is less than 100 centipoise and which contains greater than about 480 grams of acid equivalent of glyphosate per liter of composition.

7. (Original) A method of controlling undesirable vegetation which comprises applying to the vegetation a water-diluted composition of Claim 1.

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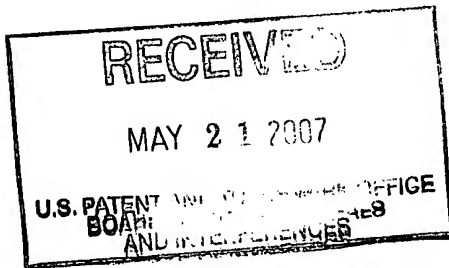
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Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313

Sir:

AUTHORIZATION FOR PAYMENT OF FEES

Filed herewith is the Appellants' Brief Under 37 C.F.R. § 41.37. The filing date of the application is as noted above.

The \$500.00 fee for the filing of this Appellants' Brief required under §41.20 (b) (2) may be charged to our Deposit Account No. 04-1529. If this amount is incorrect, please credit or debit our Deposit Account.

Respectfully submitted,

Craig E. Mixon

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